

Cardiac Lipoma Extirpation with Chronic Lung Abscess Excision: A Case Report of Simultaneous Video-Assisted Thoracoscopic Surgery Procedures

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This study examined a rarely seen benign heart tumor that was found incidentally on a chest X-ray. Radiological images were taken of a 42-year-old patient with no symptoms of a heart condition, showing a thick-walled left lung cavity that appeared after inflammation and concomitant enlargement of the cardiac shadow. A large subepicardial lipoma in combination with a chronic abscess on the left lung was revealed on chest computed tomography. The treatment consisted of simultaneous surgical removal of both the lung and heart lesions using video-assisted thoracoscopic surgery.

Keywords: Cardiac, Lipoma, Video-assisted thoracoscopic surgery, Simultaneous, Procedures, Case report

Case report

A 42-year-old man was admitted to the Center for Thoracic Surgery on February 4, 2020, after radiological imaging showed a cavity in the left lung and enlargement of the cardiac shadow. His recent medical history consisted of 9 weeks of poorly treated fever and a mild cough with sputum, which had gradually decreased. There had been no respiratory symptoms for the previous 12 days. Chest computed tomography (CT) scans revealed a thick-walled (up to 1.5 cm) cavity measuring 5.3×6.7×6 cm located in the left lung (S₁₊₂). A chronic lung abscess was diagnosed. In addition, an intrapericardial-bordering collection of adipose tissue close to the left cardiac surface measuring 12.1×9.9×11.7 cm in size that was interpreted as a subepicardial lipoma was found (Fig. 1). The patient showed no symptoms related to having a heart mass. An electrocardiogram showed regular sinus rhythm with some indications of fibrosis in the antero-septal part of the left ventricle. A sonographic exam of the heart did not find abnormalities in the myocardium structure.

Surgery was performed using left-side access. The main



Fig. 1. Chest computed tomography: coronal view.

incision was made in the fifth intercostal space of the left axillary area. A sufficient operative field within which to manipulate instruments and subsequently evacuate the



Fig. 2. Surgical specimen: a fatty mass.

cardiac mass was established using a wound protection sleeve (type: PQA60/70-60/150; Tonglu Kanger Medical Instrument Co. Ltd., Hangzhou, Zhejiang, China). A 10-mm thoracoscope was introduced through a separate port.

The first step in surgery was to excise the lung lesion by conducting an anatomical segmentectomy, dividing the segmental bronchus and vessels. The lung cavity walls were strong enough to be cleanly dissected from the surrounding parenchyma via electrocautery. The cavity was not opened in order to prevent intraoperative contamination. A tissue defect created by lesion excision was sutured manually. After lung abscess removal was successfully completed, the next stage of the procedure was initiated. The pericardium was opened along the phrenic nerve. The cardiac fatty neoplasm was gradually pulled out to the pleural cavity, disconnected from the epicardium via electrocautery at the place of an adherence near a left atrioventricular groove, and removed through the main incision of the chest wall. The tumor was only loosely attached to the cardiac wall; thus, its removal was successful and clean. After loose suturing of the pericardium, the thorax was closed after inserting a chest drain.

Gross examination of the neoplasm revealed a fatty, yellowish mass (Fig. 2). The samples were analyzed histologically, showing the findings of a benign lipoma with evidence of calcinosis (Fig. 3). Upon inspection, the removed lung lesion was described as being a rounded elastic encapsulated formation with a cavity inside. It was identified as a chronic pulmonary abscess following a histological investigation.

Postoperative medication included ceftazidime with

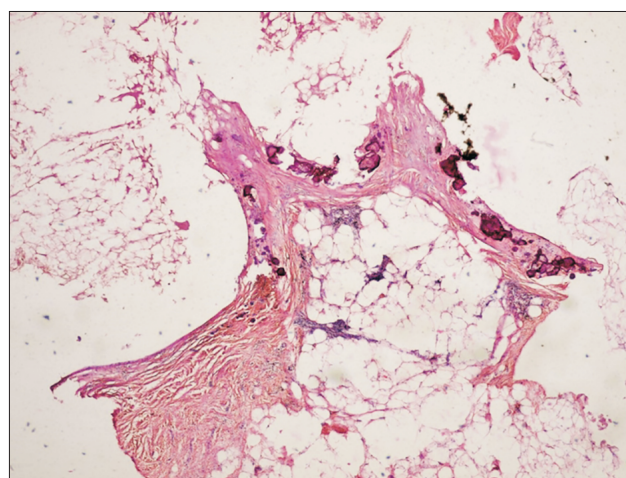


Fig. 3. Histological picture of lipoma with foci of calcinosis (H&E, $\times 40$).

metronidazole due to a past pulmonary infection. The remainder of the patient's recovery was uneventful. The patient remained asymptomatic at an 11-month follow-up.

The patient provided written informed consent for publication of clinical details and images. The study was approved by the Bioethics Committee of National Pirogov Memorial Medical University, Vinnytsya, on January 26, 2021 (protocol no. 1).

Discussion

This case is an example of a rare clinical situation, involving a combination of a heart lipoma and a chronic lung abscess. A primary cardiac lipoma is rare on its own and is often asymptomatic until it reaches a large size. Bang et al. [1] found only 1 case out of 28 patients who had undergone surgical treatment to remove a cardiac tumor from August 1993 to December 2008. Another study found only 2 lipomas out of 939 cases of patients with benign cardiac tumors within a 50-year period (January 1, 1969 to January 1, 2019) [2].

The critical location of the neoplasm is what makes it a threat, despite its histological features. Even though it is benign, the tumor can cause severe complications and death due to its growth into critical areas of the heart. Fan et al. [3] examined a case involving a 60-year-old man who underwent surgery for a cardiac lipoma that resulted in death caused by the tumor breaching the walls of the heart.

A cardiac lipoma requires surgical treatment, which is mainly performed by cardiac surgeons. According to Steger [4], heart lipomas usually originate in epicardial fat tissue and spread towards the pericardial sac, with most of

them being subendocardial or epicardial and only 25% invading the myocardium. The above-mentioned growth features enable successful tumor removal without cardiopulmonary bypass in a considerable number of cases.

Heart and lung comorbidity necessitates concomitant procedures. Thus, combined thoracic and cardiac operations have been performed on occasion when required. Rocha et al. [5], for example, documented extensive cardiac resection to treat interatrial septum lipomatous hypertrophy, which was performed simultaneously with pulmonary hamartoma removal.

We do not suggest conducting simultaneous operations on the heart and lungs as a rule, especially when performed by general thoracic surgeons. First, the preoperative diagnostics should confirm the absence of intramural extension of the encapsulated mass as well as the lesion in critical areas (i.e., coronary arteries). In this case, this information was obtained via a sonographic heart examination and CT scan of the chest. Then, the possibility of performing surgery safely should be analyzed, with a thorough intraoperative reassessment before the beginning of resection. Importantly, a pulmonary procedure should not be performed if there is a risk of serious infection. The described surgery consisted of lung and cardiac stages. The decision to open the pericardium was made under favorable intraoperative circumstances: the absence of massive adhesions, uncomplicated removal of the lung cavity without damage to the wall, and no leakage of content.

Another issue is the use of video-assisted thoracoscopic surgery (VATS) in the surgical treatment of cardiac lipoma. According to Sciuchetti et al. [6], the VATS technique is safe and effective for the reasons mentioned above. Elkhayat et al. [7] documented 1 instance of both open and minimally invasive approaches to heart lipoma resection and concluded that either is an option for removing benign tumors that do not show invasion of the surrounding areas. In some situations, the location of a neoplasm does not allow for excision using VATS. For example, Kim et al. [8] examined a patient who underwent open surgery using cardiopulmonary bypass due to a lipoma formed on the posterior aspect of the left atrium. We believe that VATS may become the default solution in cases of benign intrap-

ericardial lipoma when the preoperative evaluation excludes infiltration via the myocardium and the location of the mass enables removal from the direction of the pleural space without requiring cardiopulmonary bypass.

Conflict of interest

No potential conflict of interest relevant to this article was reported.

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